

# PATENT COOPERATION TREATY

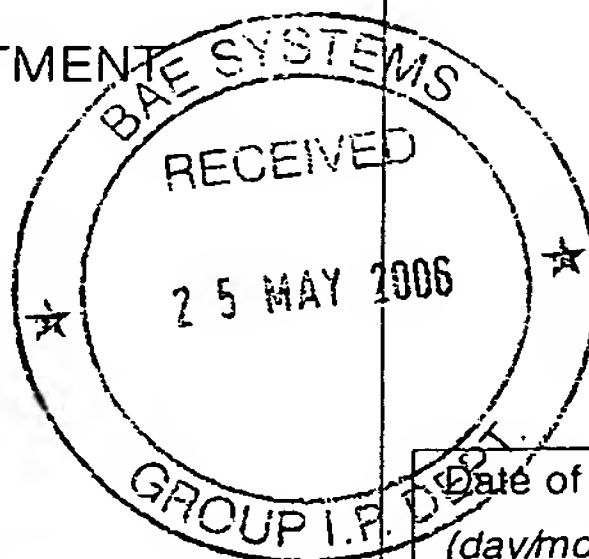
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From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

## PCT

To:

INTELLECTUAL PROPERTY DEPARTMENT  
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NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY

(PCT Rule 71.1)

Date of mailing  
(day/month/year)

22.05.2006

Applicant's or agent's file reference  
XA1909

### IMPORTANT NOTIFICATION

International application No.  
PCT/GB2005/000981

International filing date (day/month/year)  
15.03.2005

Priority date (day/month/year)  
15.03.2004

Applicant  
BAE SYSTEMS PLC et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

#### 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international  
preliminary examining authority:



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# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference XA1909	<b>FOR FURTHER ACTION</b>		See Form PCT/PEA/416
International application No. PCT/GB2005/000981	International filing date (day/month/year) 15.03.2005	Priority date (day/month/year) 15.03.2004	
International Patent Classification (IPC) or national classification and IPC INV. G06K9/68			
Applicant BAE SYSTEMS PLC et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand  13.01.2006		Date of completion of this report  22.05.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer  Müller, M  Telephone No. +49 89 2399-7409 	

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/GB2005/000981

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on
- ☒ the international application in the language in which it was filed
  - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
    - ☐ international search (under Rules 12.3(a) and 23.1(b))
    - ☐ publication of the international application (under Rule 12.4(a))
    - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1-9 as originally filed

**Claims, Numbers**

1-4 as originally filed

**Drawings, Sheets**

1/2-2/2 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-4
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-4
Industrial applicability (IA)	Yes: Claims	1-4
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

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**Box No. VII Certain defects in the international application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)

PCT/GB2005/000981

**Citations**

Reference is made to the following documents:

D1: Alcott 2000  
D2: Wallis 2003  
D3: Ho 1998

**V: Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

- 1 None of the present claims shows the required inventive step under Article 33 (3) PCT.
  - 1.1 Document D1 is considered the closest piece of prior art.
  - 1.2 With regard to claim 1, D1 discloses  
an apparatus for classifying elements (see introduction) - in particular elements within an image; cf. refs. 24-26 on pattern recognition -, wherein an elements is defined by a vector of feature values, the apparatus comprising:  
classifier means comprising a plurality of classifiers (viz. experts; cf. abstract) each operable, in respect of an element to be classified, to receive predetermined subset of feature values from the element feature vector (cf. eg. sec. 2.1);  
combining means operable to combine outputs from the plurality of classifiers to determine which of the predetermined classes to associate with an element to be classified (see eg title); and  
[means to selecting] each of said predetermined subsets of feature values according to [a cyclic selection scheme; cf. p. 10, left, 2nd par., line 5] such that all features are input to at least one classifier.
  - 1.3 D1 does not discuss training specifically. However it is obvious that each classifier is only trained with regard to the features associated with it (cf. D1, p. 9, right, 2nd par.; see also D3, p. 833, right, 4th par.).
  - 1.4 The cyclic distribution selection scheme of the "parallel system" according to D1 (sec.

2.1) assigns the features to different experts one by one in view of maximising system performance and apparently independent on their adjacency in a feature vector.

1.5 Now claim 1 is entirely silent about what the features represent or how the different features defining an image element are arranged in the feature vector. By consequence, claim 1 gives no indication whatsoever as to the meaning of adjacency. In other words, it cannot be assessed from the claims what effect if any the cyclic selection claimed has over another selection scheme such as the one of D1.

1.6 For the purpose of assessing claim 1, the cyclic selection scheme claimed boils down to a specific scheme of distributing a given list of features fairly amongst a number of classifiers. Such selection would seem to be a particularly straightforward way of implementing a "random" or "pseudorandom" (cf. D3, p. 833, right, 4th par., 1st sent.) selection. To be more precise: If the order of features is insignificant - which it is within the meaning of claims 1 and 4 - then a uniform cyclic selection has the same statistical properties as a truly or approximately random selection.

1.7 In view of this, claim 1 lacks an inventive step over D1, Article 33 (3) PCT. The same applies to claim 4 as well.

2 Regarding claims 2 and 3 it is first noted that the classification of hyperspectral images where features correspond to intensities of frequency bands along the frequency axis are known from D2.

2.1 It is also noted that neither claims 2 nor 3 specify that adjacent features in the feature vector represent adjacent frequency bands. Neither seems the description to disclose this fact. In contrast, it can easily be imagined that the feature vector is "filled" from left to right as the sensors associated with different frequency bands happen to produce their measurements. Or, frequencies can be held in the feature vector in the order of their significance for a certain detection task. Apparently, neither ordering has any necessary correlation with the order of frequencies.

2.2 It is therefore considered that even with the limitations of claims 2 and 3 the adja-

gency of features on the feature vector has no particular implied meaning which allows to associated a clear technical effect to the claimed selection scheme.

- 2.3 Therefore, claims 2 and 3 also lack an inventive step over documents D1 and D2, Article 33 (3) PCT.

**VII: Certain defects in the international application**

- 3 Document D1 is not acknowledged in the description, Rule 5.1 (a) (ii) PCT and the two-part form of claims 1 and 4 in view of D1 seems inaccurate, Rule 6.3 (b) PCT.
- 4 The claims do not contain reference signs, Rule 6.2 (b) PCT.